Please amend the specification as follows:

IN THE DRAWING

Please correct the Sheet of formal Drawing as follows:

(A) Sheet 1 of 14 of the Drawing-Fig. 1:

(i) Relocate the lead line to numeral "60" as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(ii) Add a lead line and numeral "64" as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(iii) Add a lead line with an arrowhead and a numeral "66" as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(iv) Change numeral "106" to numeral --68-- as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(v) Add a lead line and numeral "69" as shown in "red" on the enclosed Sheet 1 of 10 of the Drawing;

(vi) Change numeral "80" to numeral --82-- and relocate lead line to new numeral "82" as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(vii) Change numeral "80'" to numeral --82'-- as shown in "red" on the enclosed Sheet 1 of 14 of the Drawing;

(B) Sheet 2 of 14 of the Drawing-Fig. 2:

(i) Add a lead line and numeral "64" as shown in "red" on the enclosed Sheet 2 of 14 of the Drawing;

(ii) Delete the word "seconds" and replace with --minutes--as shown in "red" on the enclosed Sheet 2 of 14 of the Drawing;

(C) Sheet 3 of 14 of the Drawing-Fig. 4:

(i) Delete the word "seconds" and replace with --minutes--as shown in "red" on the enclosed Sheet 3 of 14 of the Drawing;

(D) Sheet 6 of 14 of the Drawing-Fig. 10:

(i) Change numeral "412" to numeral --416-- as shown in "red" on the enclosed Sheet 6 of 14 of the Drawing; and

(ii) Change numeral "436" to numeral --438-- as shown in "red" on the enclosed Sheet 6 of 14 of the Drawing;

Enclosed herewith are Four (4) substituted "replacement sheets" of Drawing in A-4 size for Sheets 1 through 3 and 6 of

the 14 Sheets having the drawing corrections shown in red on the "redlined" Sheets of Drawing for Sheets 1, 2, 3 and 6 of 14 sheets of Drawing referenced above. No corrections are required for Sheets 4, 5 and 7 through 14 of the Drawing.

No new matter has been added in making these corrections.

The "replacement sheets" comprising formal Sheets of Drawing for Sheets 1 through 3 and 6 are deemed as filed as of the filing date of this AMENDMENT.

IN THE SPECIFICATION

Please correct the specification by rewriting the paragraphs set forth below:

Please rewrite the paragraph beginning at line 15 and ending at line 21 on Page 26 as follows:

> The milk claw 60 further may optionally include a control orifice 70, which is in the form of a calibrated orifice, for controllably admitting atmospheric pressure to the milk claw 60. Control orifice to functions for controlling the vacuum level within the milk claw outlet 64. Also, the milk claw 60 has a housing 66 that has a central chamber ~~104~~ 68 defined by sidewalls ~~106~~ 69.

Please rewrite the paragraph beginning at line 15 and ending at line 20 on Page 27 as follows:

> The term "milk transport conduit" is intended to also include any other intermediate in line components, devices, control apparatus or the like (such as, for example, a milk flow measuring device 82 for terminating or shutting off the vacuum at the end of a milking cycle ~~82~~ shown in Fig. 1) vacuum sensing devices and the like.

Please rewrite the paragraph beginning at line 3 and ending at line 11 on Page 28 as follows:

> The milk line 76, commonly referred to as a milk transfer line, is in the form of a stainless steel line with adequate capacity to carry vacuum to the cow from the vacuum source ~~26~~ 24. The vacuum manifold header 30 applies vacuum via a conduit 84 and a moisture trap 86 to a receiving vessel such as a receiving jar 90 which is in the form of an enclosed vessel functioning as a vacuum chamber. The receiving jar 90 is operatively connected to a milk pump 96 to remove the milk collected in the receiving jar 90.

Please rewrite the paragraph beginning at line 1 and ending at line 9 on Page 29 as follows:

> In addition, the milking system can have control valves, such as ~~80~~ 82 and ~~80'~~ 82' which are used to enable or to turn on the milking vacuum on or to disable the milking vacuum or to turn off the milking vacuum. The control valves ~~80~~ 82 and ~~80'~~ 82' may include or cooperate with a sensor for detecting whether the milking vacuum is on or off which is represented by lead line

136 and the sensor can generate a vacuum control signal verifying that the milking vacuum is present. The vacuum control signal can be used as a verification signal for the monitoring and control functions as discussed hereinafter.

Please rewrite the paragraph beginning at line 11 on Page 30 and ending at line 2 on Page 31 as follows:

Fig. 1 illustrates diagrammatically the controller 104 for monitoring and controlling operating pulsators in a milking system. Controller 104 is typical of a controller which would be operatively connected to each one of all of the pulsators in the milking system. If the milking system ~~as~~ has "N" milking apparatus, each milking apparatus would have a pulsator similar to pulsator 40. Thus, each milking system having "N" pulsators would also have "N" controllers, one for monitoring each of the pulsators. As discussed herein below in Fig. 7, each pulsator is operatively connected to and controlled through the controller by a system computer having a memory which has as stored data therein in the form of a stored reference signal representing a predetermined vacuum range of

pulsating vacuum levels programmed as acceptable for all of the milking system pulsators. The system computer can control and/or program operation of all pulsators by setting, controlling a monitoring all parameters such as phase periods, pulsation factors and the like.

Please rewrite the paragraph beginning at line 3 and ending at line 12 on Page 31 as follows:

The controller 104 has a first input 102 having a first sensor 106 which is configured to be operatively connected to the pulsator 40 via vacuum test port lines 108 which are operatively connected to the pulsation line 50 of the pulsator 40. The pulsator 40 has controlling solenoids 54 which are operatively connected via power lead lines depicted by arrow 52 to the controller 104 to apply a 24 volt, direct current power 130 from the controller 104 to the operation of solenoids 54. The controller 104 can control the application of power to and the removal of power from controller 40 via power lead lines 52.

Please rewrite the paragraph beginning at line 1 and ending at line 5 on Page 32 as follows:

> The control device 112 includes a control circuit which is responsive to at least one control signal for signaling that the designated pulsator 40 pulsating vacuum level is outside of the range of pulsating vacuum levels programmed as acceptable to the milking system pulsators. The controller 104 including the processor 110 having the control device 112 and the monitoring device 114 can communicate with a remote computer via a communication system represented by arrow 134.

Please rewrite the paragraph beginning at line 21 of Page 32 and ending at line 4 on Page 33 as follows:

> Fig. 2 is a pictorial representation of a milking apparatus comprising a milk claw 60 and four inflations 42 wherein each inflation has a teat cup having a shell and a teat cup liner provided in the shell to form a pulsation chamber between the teat cup liner and the shell. The milking system includes the pulsator 40 for providing pulsation vacuum level pulses over line 50 to each inflation 42 via conduits 150 and 152

to the inflation nipples 140 and the pulsation vacuum level is applied as an input to the controller 104 for monitoring and controlling the pulsator 40.

Please rewrite the paragraph beginning at line 4 and ending at line 7 on Page 34 as follows:

During the open phase A, the vacuum remains substantially at the working vacuum. The duration of the open phase ~~A~~ B is the time interval shown by 172 and 174. During the open phase, the interior of the teat cup liner is kept open.

Please rewrite the paragraph beginning at line 12 on Page 36 and ending at line 3 on Page 37 as follows:

The controller 104 is operatively connected via a powered distribution device 184 to supply 24 volt direct current power over the common lead 186 and to power leads 188 and 190, respectively. In addition, the vacuum test lines ~~106~~ 108 from the controller 104 are operatively connected to the pulsating lines 50. The pulsating vacuum level appearing on pulsating line 50 is carried by vacuum test lines 108 to the sensors 106. The

controller 104 has a "red" illumination device 120 and a "green" illumination device 124 to visually indicate whether the pulsating vacuum level from a designated pulsator is operating outside of or within the range of pulsating vacuum levels programmed as acceptable for the milking system pulsators, respectively, all under control of a control circuit of the monitoring device 144 of Fig. 1. A yellow illumination device shown by dashed lines 122 may be used to signal that the pulsator vacuum level is at a minimum acceptable level for milking pulsator.

Please rewrite the paragraph beginning at line 17 on Page 37 and ending at line 5 on Page 38 as follows:

The computer system is operatively connected by a communication system, shown generally by arrow 222 to each of the pulsators in the milking system. In Fig. 7, milking system 1 is shown as having a pulsator "1", illustrated by 40, and a controller "1", illustrated by 104. The controller is operatively connected to a source of 24 volts direct current power ~~180~~ 180 via power leads 186, 188 and 190. The controller "1"

illustrated as 104 as operatively to the communication system 222 via conductors 224 to facilitate transfer data between the computer 220 and the controller "1" illustrated as 104. The controller "1" illustrated as 104 receives a signal indicating that the milking vacuum is on verifying that the milking apparatus has been attached to a dairy animal for milking and that a milking operation is to be performed.

Please rewrite the paragraph beginning at line 6 and ending at line 13 on Page 38 as follows:

Since a milking system has "N" milking apparatus, each of the milking apparatus has a controller, all of which are represented by controller "N" identified as 200 which are operatively connected to the communication system 222 via leads 226 and a pulsator "N" identified as 204. Controller "N" identified as 200 likewise receives an input signal verifying that the milking vacuum for the milking system having the controller "N" illustrated by 200 is ready to commence a milking cycle.

Please rewrite the paragraph beginning at line 14 and ending at line 18 on Page 38 as follows:

The computer 220 via communication system 222 is operatively connected to an annunciator 232 which functions as a locked display and alarm device. The annunciator ~~230~~ 232 connected by leads 230 to the communication system 222 can be actuated by the computer 220 showing the operating addition of all "N" pulsators in the milking system.

Please rewrite the paragraph beginning at line 10 and ending at line 16 on Page 40 as follows:

Fig. 8 is a detailed block diagram of a controller 220 for practicing this invention. The controller 220 has a programmed microprocessor ~~260~~ 260 which functions as a local processor in the controller 220. The microprocessor 260 receives a verification signal that the milking vacuum is on via lead 136. The microprocessor ~~262~~ 200 communicates via lead 262 through a network controller 264 and lead 266 to a network computer 220 as illustrated in Fig. 7.

Please rewrite the paragraph beginning at line 17 on Page

40 and ending at line 2 on Page 41 as follows:

The microprocessor 260 receives a first signal representing a pulsating vacuum level for the front pair of inflations through a first input 302 and a pulsating vacuum level for the rear pair of inflation through a second input 304. The pulsating vacuum from the front and rear inflations are applied to inputs 302 and 304 via the vacuum test lines to the vacuum test ports as illustrated by lead 300. The first input 302 and a second input 304 have transducers or sensors which convert the pulsating vacuum level to a electrical signal which are applied via leads 308 and 310, respectfully, to the programmed micro-processor 260. The programmed micro-processor 260 controls the front output 322 of the pulsator via lead 320 and the output of the front output 322 is applied to the pulsator via leads 330. The programmed micro-processor 260 controls the rear output 328 of the pulsator via lead 326 and the output of the rear output 328 is applied to the pulsator via leads 330. The power to the controller 220 is provided by a

24 volt DC source 370. The retract input signal from the pulsator is applied via conductor 132 to the stop/start signal 362 which, in turn apples the start/stop signal to the programmed microprocesser 260. The programmed microprocesser 260 controls the indicator lights 342 via led 340 to illuminate the appropriate red light 120, yellow light 122 and green light 124.

Please rewrite the paragraph beginning at line 3 and ending at line 21 on Page 41 as follows:

Fig. 9 is a flow chart showing the steps of method of using the pulsator controller for monitoring and controlling a pulsator. In Fig. 9, a start signal represented by flow chart item 400 and represents that a milking cycle is to commence. The processor within the controller retrieves or reads the stored reference signals from the computer representing a predetermined vacuum range of pulsating vacuum levels programmed as acceptable for milking system pulsators. Absent a stop signal which would be generated by the stop signal represented by flow chart item 412 which is applied to the start 400

as represented by arrow 420, the milking cycle can commence and the controller has verified that a milking vacuum is present and that the milking apparatus is in fact attached to the dairy animal to be milked. The stop signal represented by flow chart item 412 ~~has an input representing that~~ is responsive to either the absence of or the presence of a milking vacuum ~~is present as represented by flow chart 412~~ represented by item 416. ~~The signal generated by the flow chart item 412 is applied as a yes to~~ If a milking vacuum represented by item 416 is present, a "yes" input 414 ~~of~~ is applied to the stop signal represented by flow chart item 412. ~~The start~~ In such event, the stop signal of item 412 applies a "yes" to the start signal of flow chart item 400 enabling the system to start since a milking vacuum is present. In the absence of a milking vacuum being present, a "no" signal represented by arrow 422 is applied as ~~a yes~~ an input to the ~~stop signal~~ read pressure sensors and save data of flow chart item ~~472 as represented by lead 410~~ 422 and the system will then be disabled until a

"yes" signal represented by arrow 414 is present enabling the stop signal 412 to advise the start signal 400 that a milking vacuum is present.

Please rewrite the paragraph beginning at line 42 and ending at line 16 on Page 42 as follows:

If the auto control mode represented by flow chart item 428 decides that no adjustment of timing is required, a no is communicated via lead ~~40~~ 440 to bypass the adjust timing represented by flow chart item 436.

Please rewrite the paragraph beginning at line 17 on Page 42 and ending at line 2 on Page 43 as follows:

If an adjust timing is required as represented by flow chart item 436, the output is applied to the step of set front and rear output levels for the pulsators as represented by flow chart item ~~436~~ 438. The step represented by flow chart item 436 will respond to either an adjust instruction from the adjust timing represented by flow chart item 436 applied to the set front & rear output 438 as represented by arrow 434 or to a no represented by lead 440. If an adjustment is not necessary, the step of responding

monitoring system, the information contained in box 528 designates the minimum and maximum times to trigger or enable the yellow illumination device.

Please rewrite the paragraph beginning at line 12 and ending at line 17 on Page 52 as follows:

In an overview, the computer controller monitoring and control is ~~oper table~~ operable to control one component in a milking system. For example, if a pulsator controller signal to the computer that a yellow illumination device is activated or enabled, the computer can tract the pulsator and independently generate a warning signal in response to a programming monitoring criteria.

represented by flow chart item 436 will then respond to the no received from the auto control mode of flow chart item 428 represented by lead 440.

Please rewrite the paragraph beginning at line 3 and ending at line 16 on Page 46 as follows:

Fig. 12 is a pictorial representation of monitor in a computer system used for monitoring the pulsators in a milking system showing on a display page 520 programmed stored reference signals to be applied to the processor from the computer system wherein the stored reference signal represents a predetermined vacuum range of pulsating vacuum levels programmed as acceptable for milking system pulsators and the pulsator configuration 524 controls the on/off time of the pulsators as depicted by the pulsation section 526. In Fig. 12, the alarm levels are set in milliseconds for phases a through d and a maximum and minimum vacuum in inches of Hg as shown by the data in box 528. Box 528 shows that the monitored values are averaged over three cycles. If a yellow illumination device is present in the